EPA Region 7 TMDL Review

TMDL ID	111	*Water Body ID*	IA 04-LDM-00270-L
Water Body Name	Lake Miami		
Pollutant	Siltation and Nutrients		
Tributary	Bluff Creek		
State	IA *HUC*	07100009040	
Basin	Lower Des Moines		
Submittal Date	12/13/2001		
Approved	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter dated December 13th, 2001, and received by EPA December 17th, 2001, formally submitting this TMDL for approval under Section 303(d).

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Lake Miami was identified as fully supporting but threatened for the aquatic life use. The water quality conditions, in regards to nutrient concentrations and turbidity, had deteriorated compared to earlier assessments in 1990 but the lake was still supporting designated uses. Many of the historic sediment problems have been corrected in the watershed, and recent work in the watershed indicates that the downward trend in water quality may have been halted or reversed. Efforts are ongoing to reduce overall sediment and nutrient loading to the lake through a wetlands project designed to capture these pollutants before their entry into the lake. Maintaining the current load of sediments and nutrients, along with the phase 2 surrogate measure of a fully supporting Class B aquatic life use, will ensure that water quality standards are attained.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

Water quality standards and beneficial uses are described as well as applicable narrative criteria. Phase 1 numeric expressions for total phosphorus and sediment delivery to the lake are provided, are site specific to the watershed, and are described using USDA/NRCS methodologies for estimating erosion and sediment delivery. A Phase 2 surrogate measure is also identified as a fully supporting Class B aquatic life use which will be determined in accordance with the Statewide Biological Sampling Plan protocol.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The concern was that sediment and excess nutrients may be impacting the fishery of the lake either directly or indirectly through loss of habitat, interference with sight feeding fish and the benthic community, and/or loss of macrophyte cover, which ultimately can result in an imbalance in the fish community. Since excess sediment and nutrients may impact aquatic life in this lake, the target includes both sediment and nutrient loads to the lake and measurement of the aquatic life within the lake.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

There are no point source contributions of sediment and nutrients to the lake. Land uses in the watershed are completely described and modeling of sediment and nutrient delivery to the lake has been completed using AGNPS and a GIS based RUSLE model. The models identified the subwatershed directly south of the lake as contributing the most sediment and nutrients of any of the lake's subwatersheds; this is the area where a wetlands project will be implemented to capture sediment and nutrients before they can be delivered into the lake. Field investigations to determine land use, cropping patterns, fertilizer use, conservation practices, livestock operations, and gully erosion were made in both 1990 and in 2000. The principle source of sediment and nutrients to the lake has been determined to come from sheet and rill erosion.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Phase 1 of the TMDLs is to maintain current sediment and nutrient loads and to monitor to determine if these current loads actually are impacting the aquatic life use. Phase 2 will evaluate the effect the sediment and nutrient load targets have on the aquatic life community in the lake and allocations may be revised based on this assessment. The load capacity for sediments is identified as 1,120 tons/year, and for nutrients it is 1.4 tons/year phosphorus.

WLA Comment

The wasteload allocation is zero.

LA Comment

The load allocation for sediments is 1,120 tons/yr; the load allocation for nutrients is 1.4 tons/yr phosphorus. The total load allocation equals the load capacity.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety is implicit based on the Phase 2 surrogate measure of attainment of the Class B aquatic life use, and the wetland project, which will provide further reduction in sediment and nutrient delivery rates.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

A yearly allocation is used since sediment and nutrient loading varies substantially by season and between years, and the impacts are felt over multi-year timeframes.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Public meetings were held in Des Moines and Albia on 1/27/01, 1/22/01, and again in Albia on 10/31/01to present the final draft TMDL to the public. Copies of the draft TMDL were also posted on the IDNR website for public review.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

The DNR Fisheries Bureau will conduct an assessment of the lake in accordance with the Statewide Biological Sampling Plan protocol by the end of the 2002 season to characterize the condition of aquatic life. In-lake water monitoring will also be conducted three times

per year for each of the field seasons 2000-2004 as part of the Iowa Lakes Survey.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Reasonable assurances are not required in the TMDL because there are no point sources contributing to the impairment in the watershed.